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The Universal Instructor in all Arts and Sciences:

AND

Pennsylvania Gazette.

To be continued Weekly. *The 4th of the 1st Month*, 1729.

ACC

ACCELERATED *Motion*, in Mechanicks, is a Motion which receives continual Increments, or Accessions of Velocity.

If the Accessions of Velocity be equal in equal Times, the Motion is said to be *uniformly accelerated.*

The Motion of falling Bodies is an *accelerated Motion*: And supposing the Medium they fall thro', *i. e.* the Air, void of Resistance; the same Motion may be also consider'd as *uniformly accelerated.*

Acceleration in Mechanicks, is the Increase of Velocity or Swiftness in a moving Body.

Acceleration stands directly opposed to *Retardation*, which denotes a Dimunition of Velocity.

Acceleration is chiefly used in Physicks, in respect of falling Bodies, *i. e.* of heavy Bodies tending towards the Centre of the Earth, by the Force of Gravity.

That Natural Bodies are *accelerated* in their Descent, is evident from various Considerations, both *a priori* and *a posteriori.* Thus, we actually find, that the greater Height a Body falls from, the greater Impression it makes, and the more vehemently does strike the subject Plane, or other Obstacle.

Cause of the Acceleration *of Falling Bodies.*

Various are the Systems and Opinions which Philosophers have produced to account for this *Acceleration.* ------ Some attribute it to the Pressure of the Air: The farther, say they, a Body falls, the greater Load of Atmosphere is of consequence incumbent on it; and the Pressure of a Fluid, is in Proportion to the perpendicular Altitude of the Column thereof.--- Add, that the whole Body of the Fluid pressing in innumerable right Lines, which all meet in a Point, *viz.* the Centre; that Point, by the meeting of those Lines, sustains, as it were, the Pression of the whole Mass: Consequently, the nearer a Body approaches thereto, the Effect or Pressure of more united Lines must it sustain.

But what overturns this Account is, that as the Pressure of the Air downwards increases; so, by the known Laws of Staticks, does the Resistance, or the Force wherewith the same Fluid tends to repel, or drive the Body upwards again.

Others insist, that the incumbent Air is the grosser and more vaporous, the nearer the Earth; and fill'd with more heterogeneous Particles, [*or Particles of a different Kind*] which are not true elastick Air; and hence, say they, a descending Body, meeting continually with less Resistance from the Elasticity or Springiness of the Air, and having the same Force of Gravity still acting on it, must necessarily be *accelerated.*

But what overturns all Accounts where the Air or Atmosphere are concern'd, is, that the *Acceleration* holds *in Vacuo*, or empty Space, and even more regularly than in Air.

The *Peripatetic* Account is worse than this; the Motion of heavy Bodies downwards, say they, arises from an intrinsick Principle, which makes 'em tend to the Centre, as their proper Seat, or Element, where they would be at rest: Hence, add they, the nearer Bodies approach thereto, the more is their Motion intended.

The *Gassendists*, on the other hand, hold that the Earth emits a Sort of attractive *Effluvia*, innumerable Threads whereof continually ascend and descend; which Threads, proceeding like Radii or Spokes from a common Centre, divaricate the more, the further they go:

So that the nearer a heavy Body is to the Centre, the more of these Magnetick Threads it receives; and hence the more is its Motion *accelerated.*

But this is refell'd by an easy Experiment; for if a Ball be let fall out of the lowest Window of a high Tower, and also out of the highest, the *Acceleration* will be the same in both Cases, notwithstanding the greater Vicinity to the one than in the other Case.

The *Cartesians* account for the *Acceleration*, from the repeated Pulses of a subtil etherial Matter, which is continually acting on the falling Body, and impelling it downwards.

After all, the Cause of *Acceleration* is nothing mysterious; the Principle of Gravitation, which determines the Body to descend, determining it to be *accelerated* by a necessary Consequence.

For, suppose a Body let fall from on high; the primary Cause of its beginning to descend, is doubtless, the Power of Gravity; but when once the Descent is commenc'd, that State becomes in some Measure natural to the Body; so that if left to it self, it would persever in it for ever, even tho' the first Cause shall cease; as we see in a Stone cast with the Hand, which continues to move, after it is left by the Cause that gives it Motion.

But beside the Propensity to descend impress'd by the first Cause, and which of it self were sufficient to continue the same Degree of Motion once begun, *in infinitum*, there is a constant Succession of subsequent Efforts of the same Principle, Gravity, which continues to act on the Body, already in Motion, in the same manner as if it were at rest.

Here, then, being a double Cause of Motion, and both acting in the same Direction, *viz.* directly towards the Centre of the Earth, the Motion they jointly produce must necessarily be greater than that of one of 'em. And the Velocity thus increas'd, having the same Cause of Increase still persisting, the Descent must necessarily be continually *accelerated.*

For, supposing Gravity, whatever it be, to act uniformly on all Bodies, at equal Distances from the Earth's Centre; and that the Time in which a heavy Body falls to the Earth, be divided into equal Parts infinitely small; let this Gravity incline the Body towards the Earth's Centre, while it moves in the first infinitely small Part of the Time of its Descent; if after this, the Action of Gravity be suppos'd to cease, the Body would proceed uniformly on towards the Earth's Centre, with a Velocity equal to the Force of the first Impression.

But, now, since the Action of Gravity is here supposed still to continue; in the second Moment of Time, the Body will receive a new Impulse downwards, equal to what it received at first; and thus its Velocity will be double of what it was in the first Moment. In the third Moment it will be triple; in the fourth quadruple, and so on continually: For the Impression made in one Moment, is not at all alter'd by what is made in another; but the two are, as it were, aggregated, or brought into one Sum.

Wherefore since the Particles of Time are suppos'd infinitely small, and all equal to one another, the Force acquir'd by the falling Body will be every where as the Times from the Beginning of the Descent. And hence, since the Quantity of Matter in the Body given, continues the same; the Velocity will be as the Time in which it is acquir'd.

More of this in our next.

FO

FOREIGN AFFAIRS.

Amsterdam, October 15. N. S.

The MEMORIAL *presented to the States-General by Count* Coningsek, *to take his Leave of them, contains in Substance what follows.*

THat he has received positive Orders from the Emperor for repeating to their High-Mightinesses, before his Departure for *Madrid*, the Assurances of the sincere Affection of his Imperial Majesty for the Republick, and the Endeavours he will constantly use for procuring them several Advantages. That the Friendship of his Imperial Majesty shall not only be constant and unalterable, but that he will always perform whatever can be expected from a good Ally and Neighbour, not doubting but their High-Mightinesses, on their part, will concur with him in that Point. That if he (the Count) might be allow'd to speak of himself, he would give their High-Mightinesses Demonstrations of his profound Respect, and the sincere Desire he is affected with of being instrumental in promoting the Continuation and Increase of the ancient Friendship, between his Imperial Majesty and their High-Mightinesses, and would think himself very happy if he could flatter himself so far as to think, that during the Course of his Ministry his was not disagreeable to their High-Mightinesses.

When the Queen of *France* went and performed her Devotions at the Cathedral-Church of *Paris*, the Cardinal de Noailles Archbishop of that City, made the following Speech to her Majesty.

ON this Memorial and Solemn Day, when your Majesty gives so signal a Testimony of your Piety and Devotion, the Ministers of the Lord are bound in Justice to give to this innumerable Multitude which surrounds your Majesty on all sides, an Example of the Joy, Affection, Respect and Veneration your Sacred Presence inspires us with. What Satisfaction for me! that I can still be the Interpreter of their Sentiments, and Eye-Witness of the Homage which your Majesty is going to pay to the Almighty in this Holy Temple.

Come, *Madam*, to the Foot of his Altar, and even into his Sanctuary, and implore the Intercession of that Holy Virgin, whose Succour and Protection always proved favourable to our Kings. Beg of her, without Hesitation, that precious Gift, which is the Object of her most ardent Vows, on which depends the Happiness of the King, the Comfort of your Majesty, the Tranquility of *France*, and the Quiet of all *Europe*.

All Things may be obtained by Faith; and this Day we may say with Confidence to your Majesty, what formerly was said to that Holy Woman, who was so earnestly praying to God for a Son: *Depart in Peace; and may the God of Israel grant the just Desire your Heart has conceived.*

Extract of a Letter from Gibraltar, *dated the* 11th *of October*, O. S.

Sir,

'I Presume you'll have heard before this, of 'the terrible Storm the Canterbury (in 'which came Vice-Admiral Cavendish) met 'with in the Bay of Biscay, wherein he gave 'himself up for lost, for a considerable Time: 'She lost her Main-mast, and Fore-mast, and 'threw some of her Guns over board, and all 'to little Purpose, she being for some Time 'entirely under Water. The Romney, Capt. 'Brown, was almost in as bad a Condition, 'she lost her Fore-top-mast, and lay about a 'Quarter of an Hour in the Water, a full Ship, 'without any Motion. By this Storm she was 'separated from the Admiral, and arrived here 'near a Week before him, and could give no 'Account of him till he came into the Bay. 'The Admiral lost near 20 Men: I hope no 'great Damage has been done on the Coast, 'for they say the Storm was the severest they 'ever were in. We hear nothing more of the 'Sallee Men, but are continually assured of 'their not touching any of our Ships. That 'Country still continues in great Confusion.

Rome, Octo. 16.

There is now no more Talk of the Affair of Cardinal de Noailles, which makes People believe it is terminated to the Satisfaction of the Romish See; the Pope at least appears very easy about it: But it is not so with Regard to the Affairs of Portugal; the Resolution of his Portuguese Majesty extreamly embarrasses that See, which will not comply, and which insists that M. Bichi shall obey the Orders which had been given here. We flatter ourselves, however, that the Queen of Portugal by her Intercession, will prevail on the King her Spouse to be satisfied with a Brief, containing the Pope's Promise that for the Time to come all the Nuncios at Lisbon shall be advanced to the Purple, as well as those of other Crowns; but it is said that the Overtures which have been made on this Subject to his Portuguese Majesty hitherto, have not had the desired Success.

Chichester, Octo. 29.

Last Night a Widow and her Maid took some Yew and Box, and boil'd, it up for a Purge, to cure a Pain in their Stomachs, but were both found dead together the next Morning.

London, Octo. 18.

Yesterday Morning at One of the Clock, a Gentleman accidentally passing by, observ'd a Woman scrambling at the Rails to get out of the Church Yard of St. Andrew's Holbourn; upon which he sent for the Sexton to let her out; and suspecting she had got in upon some ill Design, ask'd her what business she had there; she answer'd, *Dear Sir, I am just now come to Life, you may feel my Hands which are yet cold*; and so they were, she having, it seems, gone in with a Funeral, and fallen asleep in some Corner: Says he again, *What have you got in your Pockets?* She readily answer'd, *I have a little Gold and Silver, and Plumbs too*: All which was true.

Upon

Upon further Enquiry ſhe appear'd to be a Woman that had ſuffer'd great Loſſes, which diſorder'd her Senſes: She was laſt Night confined in the Watch-houſe there for her own Security.

London, Nov. 2.

Private Letters from Paris ſay, that the French Court is ſo exaſperated at the Inſolence of the Government of Tripoli, that they have reſolved to deſtroy that Piratical City, and to erect a Fort in its Place, whereby they propoſe to protect all Chriſtian Traders from the future Depredations of thoſe cruel Barbarians.

The States of Holland have diſpatched Orders to Rear-Admiral Van-Grave, their Commander in the Mediterranean, forthwith to return home, to take away from the Spaniards the Jealouſy of his joyning the Engliſh Squadron under Admiral Cavendiſh, of whom they pretend to be afraid, leſt he ſhould attempt to intercept the Galleons, which are expected home next Month.

They write from Copenhagen, that the Miſery and Deſolation of the poor Citizens, who have been, as we ſay here, burnt out of Houſe and Home in the late dreadful Conflagration in that City, is inexpreſſible. That notwithſtanding the great Care the King has taken to diſtribute Relief to the Sufferers, as well in Money, as in Proviſions; yet that many of them periſh daily, ſome for want of Bread, others for want of Clothing and Covering, being oblig'd to lodge on the Baſtions, and other open Places on the Ground, and almoſt naked; having loſt not only their Bedding and Houſhold-Goods, but even their Cloaths: That the King has order'd Tents to be ſet up for them, and Wood to be furniſhed for Firing to relieve them; but the Calamity is ſo great, and the Number of Sufferers alſo, that it is not ſufficient to relieve them all, ſo that many are left in the uttermoſt Diſtreſs.

London, Nov. 9.

At a Meeting this Week of the Alderman, Deputy, and Common-Council-Men of Bridge-Ward, it was ordered that the Beadle take Care to give the ſeveral Conſtables in the Ward Notice of their reſpective Nights of Watching, and that if any Conſtable make Default after ſuch Notice, the Beadle ſhall the next Day after ſuch Default inform the Deputy thereof, in order to his being ſummoned to appear before the Lord Mayor and Court of Aldermen, that he may be proſecuted as the Law directs. And that the Orders ſhould be put up in the Watch-houſe, and left at the Houſe of every Conſtable of the Ward.

New-York, Feb. 24.

On the 17th Inſtant arrived a Scooner, *William Smith*, Maſter, in thirty Days from Jamaica, who ſays Proviſions are ſtill low there, Flour from 23 to 30 *s. per* Barrel;

That ſome Sloops from thence have made tolerable Voyages to the *Spaniſh* Court, and others returned without diſpoſing of their Flour; That General *Hunter* had given Orders to all the Officers to be in readineſs at their reſpective Poſts, expecting Notice of War every Day.

The ſame Day arrived Capt. *Bloodworth* and *Fred*, in the Sloop Pearl, from South Carolina in 10 Days. They are Joint Maſters and Owners of her, and laſt Summer bound hither from Jamaica, were taken by a *Spaniſh* Privateer, and carried into St. *Auguſtine*, where they have been detain'd ever ſince [till lately] and upon a Trial at that Place, and an Appeal from thence, to the *Havana*, their Sloop and Part of their Cargo were acquitted, after a great Expence, the Privateers having firſt ſtripp'd them of all their Money, Clothes, Bedding, Books, Inſtruments, and what they wanted of the Cargo.

They likewiſe inform us, that the Galleons and Fleet under Convoy of 12 Men of War, in all 44 Sail, ſailed from the Havana for *Spain*, the 14th of *November* laſt Old Stile; That they had in the Fleet upwards of 70 Millions of Pieces of Eight, beſides Gold, which Gold was all on Board the chief Admiral, whoſe Ship was very deep; forty Four Millions was the King's Money, the reſt the Merchants.

The Succeſs Man of War was arrived at Jamaica, from England, with Orders, (as 'tis ſaid) to that Government to be upon their Guard, twenty Men of War being fitting from Spain, on ſome ſecret Expedition, ſuppoſed to meet the Galeons.

Judkin, a Scooner arrived here in 28 Days from St. Thomas, with Advice that a Bermudas Sloop, Vardel Maſter, who ſailed laſt Summer for St. Thomas, was taken by the Spaniards, and carried to the Havana. She had upwards of 700 Barrels of Flower on Board beſides Butter, all M. *de Lanceys*.

Philadelphia, 3d of 1ſt Month, 1729.

Laſt Seventh Day many Gentlemen and others of the antient *Bretons*, met, and walk'd in a regular Order with Leeks in their Hats, to the Church, where was preach'd in the Old *Britiſh* Language, (as its ſaid) an excellent Sermon on the Five firſt Verſes of the 3d Chapter of the 2d Book of *Timothy*. From thence they return'd in the like Order to the *Queen's-Head*, where was an handſom Dinner prepared. After which the following Healths were drank, under Diſcharge of Cannon, *viz.* the King and Church,---- Queen *Carolina*,---- Prince and Royal Family,---- Proſperity to the antient *Bretons*, and this Province,---- the Proprietor's Health, and his Honour, Governour *Gordon*'s, and many other Healths. The Stewards were *Benjamin Morgan*, Wine-Cooper, *Evan Jones*, Chymiſt, and *Edward Pearce*, Attorney at Law; and we hear the following Gentlemen are choſen Stewards for next Year, *Peter Evans*, Eſq; *Robert Ellis*, Merchant, *John Hopkins*, Merchant, and Capt. *Matthew Philips*. This, it is ſaid, is deſign'd to promote Love and Friendſhip, being a Yearly Cuſtom not only in ſeveral Parts of *England*, but likewiſe in ſeveral of his Majeſty's Colonies in *America*, and other parts of the World.

The

Custom-House, *Philadelphia, March* 4. 1729.

Entred Inwards, None.

Brigantine *Fox, Thomas Johnson*, to *Lisbon.*
Sloop *Surinam, Henry Norwood*, to *Antegoa.*
Brig. *Clementina, Jos. Arthur*, ditto.

Cleared for Departure.

Scooner *Dolphin, Richard Fortiscue*, to *Cape-Fair.*
Brig. *Hope, John Sim*, to *Madera.*
Sloop *Sea-Flower, Sam. Mott*, to *Rhode-Island.*
Sloop *Enterprize, William Burch*, to *Antegoa.*

The following Peice came to our Hands, from the same unknown Gentleman, who wrote the Essay on Popular Applause, inserted in our last Paper, which the Printer hereof of his own Accord, without the Author's Knowledge, thought fit to entitle *The Casuist*; which Title alone, it seems, has occasion'd the following Remarks.

WELL! *upon my Word, 'tis a very pretty thing to be a* Casuist. *It immediately brings a Man into a great deal of Business, and introduces him into a World of Acquaintance. Here have I now, lying before me, upon the Table*---- Let me see, Twenty three--- *Ay; no less, than twenty three Casuistical Questions! Why, it would be Business enough, to employ twenty three learned and able Divines: And yet my Correspondents are so very unreasonable, as to desire me to solve them all immediately. But I must beg to be excus'd, if I answer none of them: For, tho' I know, as a* Casuist, *I have the Privilege of talking in a Language, which no Body but my self can understand, and therefore am not easily to be confuted; and that after having thoroughly considered the Arguments that may be brought* Pro *and* Con, *it is my most undoubted Right, to leave the Case propos'd in the same Obscurity I found it: Yet notwithstanding this, I shall be very cautious how I enter upon the Undertaking, for several very material and weighty Reasons.*

First, *I have been very roundly charged, by a venerable Gentleman in this Town, with having endeavoured in my last Paper, to introduce several most damnable Heresies into the Church, and to poyson the Principles of sound and Orthodox Christians. But I do beseech that worthy Gentleman not to entertain any such hard Thoughts of me: I desire he may be pleased to read my Paper over again calmly and seriously; That he do not suffer himself to be hurried away by an intemperate Zeal, but that he consider it with the lamb-like Spirit of a true Christian: And, if he can make it appear, that any Thing I have there advanced, hath the least Tendency towards the Promotion of Heresy, or Irreligion, I will then readily acknowledge my Error, and renounce it publickly before God and the World.*

It hath been also very industriously reported, that I am of the Roman Catholick *Religion: But I do hereby declare to all good People, into whose Hands this Paper may come, that this is a most scandalous wicked Falshood, contriv'd by my Enemies, without the least Foundation, on Purpose to blast my Character, and take away my good Name: For it is very well known, that I have always professed my self a Member of the* Church of England, *as it is by Law established; in that Faith I have hitherto lived, and hope thro' the Assistance of Grace, to persevere in the same to the End. I have been a constant Frequenter of publick Worship for these Five and Forty Years past, and have always made as large Contributions in Proportion to my Circumstances, as the rest of my Neighbours. It is but very lately, that I have subscribed Five Pounds, towards carrying on the New Church,* Fifty Shillings *to the* Organ, *and* Twenty Shillings *to the* Organist: *And more than that, Mr.* Keimer *knows very well, (and I desire he will inform the Publick of it) that I have composed a Treatise, which is now in the Press, and ready to be published, consisting of seven Hundred and sixty Nine Pages in Octavo, wherein I have clearly, evidently and beyond Contradiction, demonstrated that the* Pope is the Scarlet Whore of Babylon, *and have set forth plainly and at large,* The Unreasonableness, Monstrousness, Wickedness, and Sinfulness of the Doctrine of Transubstantiation.

I know it hath been insinuated too, that I am a great Enemy to Paper-Money; tho' it is well known that I subscrib'd my Name, among a great many other good and substantial Freeholders of this Province to a Petition that was sent into the House in Favour of it.

It is therefore impossible, until these Prejudices are entirely removed, that I can exercise this my Casuistical Office, without giving Offence, and putting it in the Power of my Enemies, to do me a great deal of Injury; by perverting the most innocent Expression into some unwarrantable Doctrine either in Religion or Politicks. For which Reason I do hereby humbly resign it; of which I desire all Persons, and particularly the Printer, to take Notice.

N. B. *Let this Paper be printed without any Interpolations or Additions whatsoever.*

The *Printer* hereof gives Notice, that the Copy of the *former Piece* being pretty much interlin'd, several Typographical Mistakes have shaded the Beauty of that Piece, but rather than disoblige his ingenious Correspondent, he will re-print it, if the Author will condescend to correct it for him.

ADVERTISEMENTS.

To be Sold by the Printer hereof,

A New Book of Declarations, Pleadings, Verdicts, Judgments, and Judicial Writs. With the Entries thereupon, by *Henry Clift.* The Second Edition in Folio.

Law-Dictionary, or Interpreter of Words and Terms in the Common or Statute-Laws, by the Learned Dr. *Cowel* in Folio.

The first Part of the Institutes of the Laws of *England*, &c. by Sir *Edward Coke*, in Folio.

A Treatise of Testaments and last Wills, &c. by *Henry Swinbourne*, in Quarto.

CHoice Bacon to be sold, and good Hog's Lard, very cheap, for ready Money, by *Nicholas Ashmead*, at the Crown and Shoe, almost over against the Prison.

Benjamin Morgan, in *King's-street*, Wine-Cooper, having a good Sortment of sundry fine Wines, Cordials, and other Spirits, with choice Pickling-Vinegar, he retails them out, at very reasonable Rates.

The other Advertisements to be in our next.

PHILADELPHIA: *Printed by* Samuel Keimer, *where Subscriptions are taken in for this Paper, at* Ten Shillings *a Year, and Advertisements inserted at* Three Shillings *each.*